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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,715	06/22/2006	Tsuyoshi Hasegawa	60303.58/ho	9865
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Neomax Materials Co., Ltd. c/o Keating & Bennett, LLP 1800 Alexander Bell Drive Suite 200 Reston, VA 20191			EXAMINER GAMINO, CARLOS J	
			ART UNIT 1793	PAPER NUMBER
			NOTIFICATION DATE 08/17/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/596,715

Applicant(s)

HASEGAWA ET AL.

Examiner

CARLOS GAMINO

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12--23 is/are pending in the application.
- 4a) Of the above claim(s) 18-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 6/22/06
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.
2. This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 12-17, drawn to a method of making.

Group II, claim(s) 18-23, drawn to a product.

3. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. Groups I and II lack unity of invention because even though the inventions of these groups require the technical feature(s) of:
 - a first ferrous member and second member brazed together;
 - the ferrous material having a Ni-Cr diffusion suppressing layer with about 15-40 mass % CR placed between the members; and
 - a Cu-Ni brazing comprising about 10-20 mass % Ni placed between the diffusion suppressing layer and second member.
4. The technical feature(s) does/do not make a contribution over the prior art in view of Hasegawa et al. (JP 2003-145290 A) (see IDS).

Hasegawa teaches brazing stainless steel members together using a Ni-Cr diffusion suppressing layer and a Cu-Ni braze material. No. 25 on table 1 shows a brazing example with 20 mass% Cr and 17 mass% Ni; see figures 1-3 and abstract.

5. During a telephone conversation with Joseph Keating a provisional election was made without traverse to prosecute the invention of group I, claims 12-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to

be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Drawings

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "22" in figure 5. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet"

or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

8. **Claim 1** is objected to because of the following informalities: "a first member a second member" should read --a first member and a second member--. Appropriate correction is required.
9. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Diffusion Brazing Method Using A Diffusion Suppressing Layer.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. **Claims 12-14** are rejected under 35 U.S.C. 102(b) as being anticipated by Hasegawa et al. (JP 2003-145290 A) (see IDS).

Regarding claim 12, Hasegawa discloses:

A brazing method for brazing a first member a second member [members (5), (21), (22) (32) (33); see figures 1-5 for all reference numbers] to be joined via a braze joint formed by fusing and solidifying a brazing material [brazing filler metal (13)], the method comprising the steps of:

preparing the first member and the brazing material,

the first member [figure 3 shows two members (5) of composite (1); composite (1) in figure 1 will be used to show the structure of members (5)] including a base plate [stainless steel member (11)] composed of a ferrous material and a diffusion suppressing layer [Fe atom diffusion suppressing layer (12)] laminated on the base plate [see paragraph 0016] for suppressing diffusion of Fe atoms into the braze joint from the base plate during the brazing,

the diffusion suppressing layer being composed of a Ni--Cr alloy essentially comprising not less than about 15 mass % and not greater than about 40 mass % of Cr [layer (12) can be 25-30 mass%; paragraph 0019],

the brazing material being composed of a Cu--Ni alloy essentially comprising not less than about 10 mass % and not greater than about 20 mass % of Ni [a Cu braze with Ni 15-25 mass% is used but more specifically Table 1, No. 26 shows a braze with 17 mass%; also see paragraph 0013];

assembling the first and second members into a temporary assembly with the brazing material disposed between the diffusion suppressing layer of the first member and the second member [figure 3 shows the members (5) assembled for brazing; 0027];

performing a brazing process by maintaining the temporary assembly at a temperature of not less than about 1,200°C. to fuse the brazing material and diffuse Ni atoms and Cr atoms into the fused brazing material from the diffusion suppressing layer to form the braze joint, causing the resulting brazing material of the braze joint to have an increased melting point by the diffusion of the Ni atoms and the Cr atoms to self-solidify the braze joint [Table 1, No. 9, 10 and 12 show that temperatures not less than 1200°C can be used]; and

cooling the resulting assembly [the assembly is inherently cooled in order for other manufacturing steps to happen such as: assembly, inspection, packing, and shipping. Additionally, the assembly is inherently cooled in order to perform the corrosion resistance test; paragraph 0028].

Regarding claim 13, Hasegawa discloses:

wherein the second member includes a base plate composed of a ferrous material, and a diffusion suppressing layer laminated on the base plate for suppressing diffusion of Fe atoms into the braze joint from the base plate during the brazing, the diffusion suppressing layer of the second member being composed of a Ni–Cr alloy essentially comprising not less than about 15 mass % and not greater than about 40 mass % of Cr [as noted above members (5) are brazed together and members (5) are made of component (1) therefore, the rejection in claim 1 of the Cr content also applies here].

Regarding claim 14, Hasegawa discloses:

wherein the base plates [stainless steel member (11)] of the first member and the second member are each composed of a stainless steel.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 12-15** (claims 12-14 are alternative rejections) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (JP 2003-145290 A).

Regarding claim 12, Hasegawa teaches:

A brazing method for brazing a first member a second member [members (5), (21), (22) (32) (33); see figures 1-5 for all reference numbers] to be joined via a braze joint formed by fusing and solidifying a brazing material [brazing filler metal (13)], the method comprising the steps of:

preparing the first member and the brazing material,

the first member [figure 3 shows two members (5) of composite (1); composite (1) in figure 1 will be used to show the structure of members (5)] including a base plate [stainless steel member (11)] composed of a ferrous material and a diffusion suppressing layer [Fe atom diffusion suppressing layer (12)] laminated on the base plate [see paragraph 0016] for suppressing diffusion of Fe atoms into the braze joint from the base plate during the brazing,

the diffusion suppressing layer being composed of a Ni--Cr alloy essentially comprising not less than about 15 mass % and not greater than about 40 mass % of Cr [layer (12) can be 10-30 mass%; abstract],

the brazing material being composed of a Cu--Ni alloy essentially comprising not less than about 10 mass % and not greater than about 20 mass % of Ni [a Cu braze with Ni 15-25 mass%; see paragraph 0013];

assembling the first and second members into a temporary assembly with the brazing material disposed between the diffusion suppressing layer of the first member and the second member [figure 3 shows the members (5) assembled for brazing; 0027];

performing a brazing process by maintaining the temporary assembly at a temperature of not less than about 1,200°C. to fuse the brazing material and diffuse Ni atoms and Cr atoms into the fused brazing material from the diffusion suppressing layer to form the braze joint, causing the resulting brazing material of the braze joint to have an increased melting point by the diffusion of the Ni atoms and the Cr atoms to self-solidify the braze joint [brazing is done from 1100-1250°C; paragraph 0024]; and

cooling the resulting assembly [the assembly is inherently cooled in order for other manufacturing steps to happen such as: assembly, inspection, packing, and shipping. Additionally, the assembly is inherently cooled in order to perform the corrosion resistance test; paragraph 0028].

Hasegawa and the claims differ in that Hasegawa does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Hasegawa overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Regarding claim 13, Hasegawa teaches:

wherein the second member includes a base plate composed of a ferrous material, and a diffusion suppressing layer laminated on the base plate for suppressing diffusion of Fe atoms into the braze joint from the base plate during the brazing, the diffusion suppressing layer of the second member being composed of a Ni--Cr alloy essentially comprising not less than about 15 mass % and not greater than about 40 mass % of Cr [as noted above members (5) are brazed together and members (5) are made of component (1) therefore, the rejection in claim 1 of the Cr content also applies here].

Regarding claim 14, Hasegawa teaches:

wherein the base plates [stainless steel member (11)] of the first member and the second member are each composed of a stainless steel.

Regarding claim 15, Hasegawa teaches:

wherein the Ni–Cr alloy of the diffusion suppressing layer has a Cr content of not less than about 30 mass % [the Cr content can be 15-25% or 25-30%; paragraph 0019].

Hasegawa and the claims differ in that Hasegawa does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Hasegawa overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

14. **Claims 16 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (JP 2003-145290 A) as applied to claim 1 above, and in further view of Ishio et al. (EP 1,068,924 A1) (see IDS).

Regarding claim 16, Hasegawa does not teach:

wherein the brazing material has a thickness of not less than about 20 μm and not greater than about 60 μm .

Ishio teaches a method of joining stainless steel members using a Fe diffusion layer and a Cu braze alloy. The thickness of the braze alloy is 13-70 μm ; paragraph 0052.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the thickness of Ishio could be incorporated into Hasegawa. One would look to Ishio for a braze thickness since Hasegawa is silent as to the thickness of the braze layer. Additionally, Ishio teaches a range for the thickness therefore, braze thickness is a known variable and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Ishio and the claims differ in that Ishio does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Ishio overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Regarding claim 17, Hasegawa teaches:

wherein the brazing temperature is not less than about 1,200°C and not higher than about 1,250°C [brazing is done from 1100-1250°C; paragraph 0024], and a duration for which the temporary assembly is maintained at the brazing temperature is not shorter than about 30 min and not longer than about 60 min [brazing is done for 10-50 min and No.11 and 12 in table 1 are brazed for 40 min; paragraph 0024].

Hasegawa and the claims differ in that Hasegawa does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Hasegawa overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of

percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARLOS GAMINO whose telephone number is (571) 270-5826. The examiner can normally be reached on Monday-Thursday, 8:30am-7:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica L. Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CG

August 12, 2009

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793